

Dioxin Fact Sheet

The word "dioxin" actually refers to a family of chemical impurities unintentionally formed as contaminants during the manufacture of certain pesticides and industrial chemicals. They have no commercial value. It is chemically possible to form 75 different dioxin compounds.

The toxicity of individual dioxins varies considerably across a broad spectrum of animal species. One dioxin, in particular, has been found to be extremely toxic in tests with laboratory animals, and, thus, has triggered human health concerns. The chemical name for this particular compound is 2,3,7,8 tetrachlorodibenzo-para-dioxin but it is usually referred to as TCDD or simply dioxin.

The "acute animal toxicity" of dioxin -- that is the amount that will cause immediate poisoning -- differs considerably from one animal specie to another. In the guinea pig, the laboratory animal found to be the most sensitive, a single oral dose of an extremely minute amount in the billionths of an ounce range may prove fatal. On the strength of this finding, dioxin is commonly characterized as the most toxic synthetic substance known to man. However, other test animals, such as rabbits, dogs and hamsters, can tolerate doses ranging from 100 to more than seven thousand times more than that which can kill a guinea pig.

Studies have also shown that long term exposure to dioxin can cause a number of other serious long-term effects in animals including cancer and birth defects.

From the human experience, it's clear that man is much more tolerant of dioxin than most if not all animal species. Since no human is known to have ever died from TCDD poisoning, the amount required to produce toxicity in people is unknown.

The Journal of the American Medical Association (JAMA) reported on Oct. 15, 1982, that there is no scientific evidence that dioxin has caused cancer or birth defects in humans.

This statement is further supported by findings from health studies, many done recently, on sizeable groups of people known to have been exposed to relatively high levels of dioxin going as far back as 30 years. These studies found no increased cancer rates or other long term health problems except a persistent acne-like skin condition attributed to exposure to dioxin.

This skin condition, known as chloracne, is the hallmark (or visible indication) of both acute and chronic toxic exposure to dioxin in humans. Chloracne manifests itself shortly after exposure (usually within 2 to 3 weeks) and, in its milder forms, is characterized by a cluster of blackheads over the cheekbones, around the earlobes, on the face, chest and back. In more severe cases, pus pockets, large cysts and scarring can occur. In some industrial workers, chloracne has persisted for up to 30 years, but mild cases usually clear up shortly after exposure ceases.

In summary, a considerable amount of health information has been gathered from medical studies on groups of people known to have been exposed to dioxin. The preponderance of medical evidence from these studies indicates that chloracne will manifest itself in humans exposed to toxic levels of dioxin.

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The medical literature suggests that in the absence of chloracne, there is not likely to be any other adverse effect.

In the environment, dioxin tends to bind itself to soil particles making it a fairly immobile substance. It is not soluble in water, but rather settled in the bottom of rivers and lakes. This characteristic prevents it from contaminating drinking water supplies. However, fish that feed on the organisms at the bottom can become contaminated. The U.S. Food & Drug Administration has established 25 parts-per-trillion as the maximum amount of dioxin permitted in fish for human consumption. Dioxin has a high boiling point, about 500 degrees Fahrenheit, thus it is not volatile. This makes human exposure through inhalation highly unlikely. The most likely route of human exposure is by absorption through the skin from direct skin contact with contaminated soil. Ingestion is also a possibility, especially by children who tend to put their fingers in their mouths.

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